

# Dental Hygienist Education in the New Era

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## HISTORICAL BACKGROUND

More than half a century has passed since the enactment of the Dental Hygienist Law in 1948. Initially, only dental prophylactic procedures were included in the service provided by dental hygienists, but dental clinical assistance and dental health guidance were added thereto in 1955 and 1989, respectively. In 1949, when dental hygienist education started, the training course was stipulated by the Law to last at least one year, but as a result of the revision of the Law in 1983, the term was prolonged to two years or more and the contents of the education also underwent a thorough revision. After this revision, the course load of the three main subjects, that is, dental clinical assistance, dental prophylactic procedures and dental health guidance, came to account for 24 % of that of the obligatory subjects. Thus, the opportunities for dental hygienists to give health guidance and take prophylactic measures against dental caries and periodontal disease on a continuous basis in dental clinics have increased; also, as a result of the revision of the dental clinical remuneration tariff, fees for guidance, superintendence, etc. provided by the dental hygienists for periodontal disease have been included. Then, as a result of the 8020 campaign (retain at least 20 teeth at 80 years of age), both home dental clinical service and dental health service for grown-ups and the elderly have spread, and the needs for dental clinical care have become diversified and sophisticated. The above-mentioned commission was set up to review the contents of the dental hygienist education including practical training. Since dental hygienists must now have the expertise and skills necessary for continuous guidance on and management of caries, periodontal disease, etc., for taking care of patients and those who require nursing care or have various diseases, and for home-visit dental health guidance and community health activities, a total of at least 2,570 hours is needed to cover the entire course. Accordingly, the commission has recommended that the course term be set to at least 3 years.

Subjects such as dental care for the elderly, dental care for the disabled, home-visiting health guidance and nursing care techniques have been added to the obligatory subjects. We think that it is necessary to educate and train people who can carry out general management in collaboration with the patients themselves, their families and healthcare and welfare personnel; our aim is to foster dental hygienists with a social welfare perspective.

Under such circumstances, it has become urgently necessary to educate and train dental hygienist apprentices properly, so that they can fall back on a wide range of expertise and sophisticated skills. Thus, four-year fac-

ulties which educate future generations of dental hygienists have been set up at Niigata University and Tokyo Medical and Dental University in fiscal 2004 and at Hiroshima University in fiscal 2005.

## The change in disease incidence and the role of dental hygienists

The incidence rate of caries is continuously decreasing, whereas that of periodontal disease remains high. The fact-finding survey of dental diseases conducted in 1999 by the Ministry of Health, Labor and Welfare showed that about one third of the people surveyed between 35 and 44 years of age suffer from advanced periodontitis. Symptoms of periodontal disease were observed in more than 80 % of the people surveyed in this age range, including those with gingivitis whose symptoms were limited to the gingiva.

The tasks of dental hygienists, whose main role in the past was to assist a dentist in treating a patient in a dental clinic, have shifted from therapeutic to preventive ones; furthermore, dental hygienists have come to play a central role in the management of oral care of patients.

Large-scale epidemiologic researches in recent years have revealed that periodontal disease influence systemic diseases such as ischemic heart disease, diabetes and pneumonia as well as diseases in the teeth and periodontal tissues. Among those, diabetes is of particular importance. Diabetes is rapidly increasing in Japan and throughout the world. According to the national survey by the Ministry of Health, Labor and Welfare in 2002, there is an estimated seven million patients with diabetes and there are probably another six million people with borderline diabetes. Ischemic heart disease is the second most common cause of death in Japan.

It has been reported, for example, that the treatment of periodontal disease brought about the lowering of the highly sensitive CRP (C-reactive protein) value, which is a risk marker of ischemic heart disease (Yamazaki *et al.*, 2005), and the lowering of the HbA1c value in diabetics (Iwamoto *et al.*, 2003). Also, there were cases in which dentists suspected that their patients were suffering from diabetes because they were affected by serious periodontal disease, and eventually, their suspicion proved to be true. The above facts show that the treatment and prevention of oral diseases will bring about the promotion of systemic health and contribute to the improvement of the quality of life (QOL). At the same time, those engaging in dental clinical care should have sufficient knowledge of such systemic diseases. As stated above, a wide knowledge of medicine as well as a knowledge of dental diseases, dental therapies, dental materials and dental health has become necessary.

### **The ever-increasing number of elderly people and those in need of nursing care**

Japan of today has become an aging society in which elderly people, 65 years of age or older account for one sixth of the population. The country is now confronting a great challenge: to provide nursing care for the bedridden people and to prevent people from becoming bedridden. Care-givers have reported that a high QOL is maintained by keeping and improving the eating function of the care receivers. Also, it has been reported that elderly persons and sickly persons are apt to suffer from aspiration pneumonia at mealtimes, especially when oral hygienic management is insufficient, and the mortality rate therefrom is high. However, if care-givers have proper knowledge of the oral physiology, they will be able to prevent aspiration pneumonia in the care receivers, who will also be able to eat food with pleasure through oral care; that is, high-quality nursing care will become possible. However, in terms of high-quality medical care, the number of the personnel engaging in consistent medical care, including nursing care, and in nursing care for sickly persons is quite insufficient. For these reasons, experts in nursing care and welfare, who have advanced professional education and training in oral hygiene, so-called social welfare counselors, are needed.

### **The activities of the Department of Oral Health and Welfare, Niigata University Faculty of Dentistry**

As stated above, it is evident that the treatment and prevention of oral diseases and the maintenance and promotion of oral health are directly related to systemic health and QOL as well as oral health. These days, people who have enough knowledge of medical care and sufficiently understand the concept of nursing care are much needed on the nursing care scene. So, it is urgently necessary to set up educational and research institutions in the field of welfare and nursing care, with an emphasis on dentistry. This will foster those who will play a leading role on nursing care.

The Department of Oral Health and Welfare, with its quest for improving everyone's QOL based on proper eating conditions and habits, was set up to foster experts licensed in social welfare counseling and dental hygiene who can manage health care, medical care and welfare in a comprehensive manner. They must empathize with persons in need of nursing care, handicapped persons and their family members, and make the most of their sophisticated expertise regarding oral care, food intake and swallowing. They must help to create an environment in which the appropriate health care, medical care and welfare services truly needed by the persons requiring nursing care, handicapped persons, etc. can be comprehensively given. Upon graduating from the Department of Oral Health and Welfare, they will obtain the qualifications necessary to sit the national examinations for both dental hygiene and social welfare counseling.

### **Adoption of PBL (problem-based learning)**

We have adopted an educational method called PBL for professional education; it is introduced in the second

year of the course term. In the past, education was a process in which as much knowledge as possible was conveyed to students, who were then allowed to absorb it. Therefore, "lectures," which can simultaneously disseminate a great amount of knowledge to many students, were delivered, and knowledge-cramming curricula or curricula for each subject were designed. Those students who had good memorizing skills and fulfill many assigned tasks, as per the instructions of teachers, were given excellent scholastic marks. However, this concept of education is unwarrantable today, because the amount of information is now far greater than the human processing ability. Furthermore, new information is being generated very rapidly; for example, the knowledge accumulated by the time of graduation from the university will not be valid after 5 to 10 years. Accordingly, today's education must emphasize the fostering of human resources who can identify problems accurately and unaided, cope therewith and respond to change in an appropriate manner under any circumstances. This new concept of education is especially important in the medical and dental fields. Since in the fields of medicine and dentistry, knowledge and technology are progressing constantly, health care professionals should have the ability to collect and analyze new information, evaluate the effects of new diagnostic techniques or therapies, evaluate costs and risks, gain an insight into the changes in the social/disease structure, and others. The Department of Oral Health and Welfare of the Niigata University Faculty of Dentistry has drastically changed its educational policy from fostering useful people who have acquired abundant knowledge and skills by the time they graduate to fostering people with superb communication skills, problem-finding and problem-solving abilities and the ability to provide medical care based on reasonable judgments made from the perspective of life-long learning. We decided to implement this policy change in order to foster medical care professionals who can survive in today's rapidly changing society, and we assume that this policy change also agrees with the emergent needs of society.

Now that the objectives of education, that is, the whole concept of human resource which we want to foster, have changed, we must of course adopt the most appropriate means of educating our human resources. We have introduced PBL in professional education. Under the existing circumstances, PBL is considered to be the most appropriate means of education, because it is effective in imparting deeply integrated knowledge, problem-analyzing and problem-solving skills, skills in handling human relationships, the motivation to learn continuously, etc. There are various types of PBL, but generally speaking it is a means of imparting knowledge, skills and attitude based on the learners' own responsibility, with real-world events as a start; the learner selects problems in a real-world situation and solves them by discussing them with a small group of people.

There is a wise saying by William Osler, who left his mark as a reformer of modern medical education in North America and is also considered to be the proponent of clinical clerkship: "In what may be called the natural method of teaching, the student begins with the

patient, continues with the patient, and ends his studies with the patient. This saying expresses accurately the philosophy of the PBL tutorial as well as that of clinical clerkship. In other words, according to the concept of PBL tutorial, students come to grips with a wide range of problems, including social, economic, psychological and epidemiological, instead of learning only from biomedical models. This direction agrees exactly with ours.

### Practical training at social welfare facilities

Learning from the experience of apprenticeship is quite meaningful, because it reveals how students can make the most of their learning on the practical medical-care or nursing-care scene, and how they can put into action their problem-finding and problem-solving skills acquired using the PBL tutorial. The Department of Oral Health and Welfare is actively introducing practical training at special nursing homes for the elderly, etc. into its curriculum.

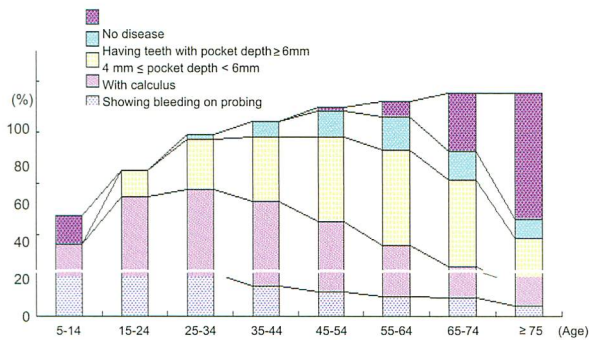


Fig. 1: Periodontal disease status in Japanese population.

Table 1 Systemic diseases for which periodontal disease is considered to be risk

- Cardiovascular disease and atherosclerosis
- Diabetes mellitus
- Respiratory disease
- Adverse pregnancy outcome
- Infective endocarditis
- Osteoporosis

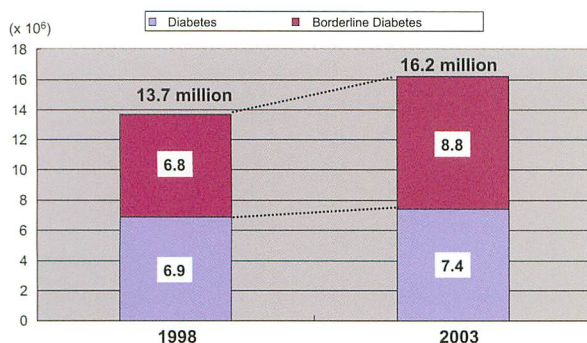


Fig. 2: Estimated diabetes patients in Japan.

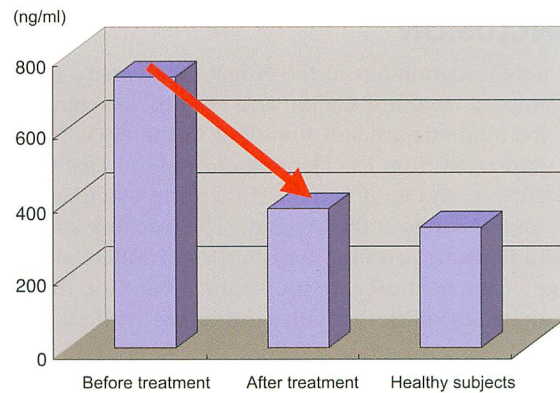


Fig. 3: Effect of periodontal treatment on serum high sensitivity C-reactive protein (hs-CRP) level. Successful periodontal treatment decreased serum level of hs-CRP. Data represent mean of 24 patients with moderate to advanced periodontitis and 21 healthy control subjects.

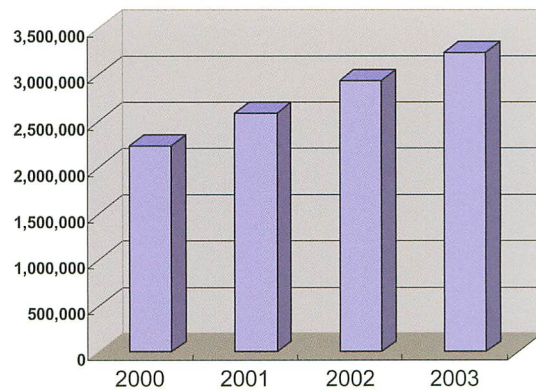


Fig. 4: The number of people needing nursing care.

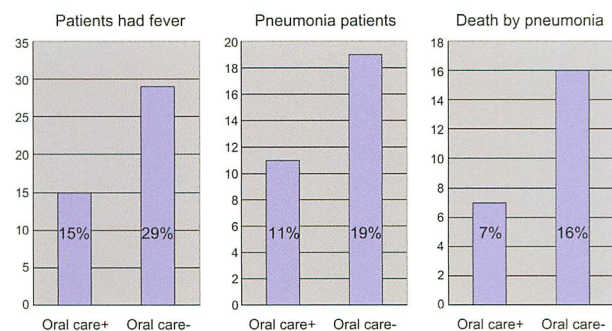


Fig. 5: Effects of oral care at nursing home. The data show that oral care can prevent aspiration pneumonia.

## CONCLUSION

The new undertakings at the Niigata University Faculty of Dentistry have just begun, and both the teaching staff and the students are still fumbling in the dark. No one has graduated from the Department of Oral Health and Welfare yet, and so it is quite difficult to evaluate these new undertakings at the moment. The teaching staff and the students are working together to formulate an ideal image of the medical care professional befitting the new age, an image which can withstand future evaluation.

## REFERENCES

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